
APPENDIX D: SUBSISTENCE DIETS

In this report, approximate marine resource dietary reference patterns have been developed from Alaska Department of Fish and Game (ADF&G) subsistence studies and previous Alaskan and Canadian dietary studies. Reference diets emphasizing seals, walrus, salmon, and subsistence activities have been developed. Total marine resource consumption levels in the reference diets range from 72 to 328 kg/yr. These fall within ranges reported for marine resources consumption reported in several recent literature reports from Canada (Health Canada, 1995; Kinloch et al., 1992; Wilimovsky, 1966). These reference dietary patterns provide a realistic range to assess the radiation dose from the consumption of marine foods. They cannot, though, accurately evaluate an individual or population dose. The reference diets also do not address the aspect of critical groups that may consume most, if not all, of their foods from local subsistence resources. Details for each community discussed in Section 6 are provided in Tables D-1 through D-10.

Table D-1. Representative diet for Kivalina, Alaska for selected years (Alaska Department of Fish and Game, 1995).

Marine-Subsistence Resource	1992	1983	1982 Consumption, lb/yr	1965	1963	Representative Consumption Rates	
						Year	Average
						lb/yr	kg/yr
<i>All Marine-Subsistence Resources</i>	575.7	635.8	574.2	711.2	1127.5	724.9	328.79
Fish	252.2	200.8	181.8	141.9	393.9	234.1	106.20
<i>Salmon</i>	14.8	5.4	1.7	0.5	5.7	5.6	2.55
Chum Salmon	12.1	4.3				8.2	3.73
Coho Salmon	0.9	0.1	1.2			0.7	0.34
Chinook Salmon	0.4					0.4	0.17
Pink Salmon	1.1	0.1	0.0			0.4	0.17
Sockeye Salmon	0.3					0.3	0.11
Unknown Salmon	0.0	1.0	0.5			0.5	0.23
<i>Non-Salmon Fish</i>	237.4	195.4	180.1	141.4	388.2	228.5	103.64
Herring	0.4	0.1				0.2	0.10
Cod	17.7	11.1	0.0	28.0		14.2	6.45
Char	203.0	177.5	179.0	113.2	378.1	210.2	95.34
Grayling	1.9	2.5	0.8	0.2		1.3	0.60
Sheefish	0.2					0.2	0.09
Whitefish	13.6	4.2	0.3	0.1	10.1	5.6	2.55
Cisco	0.6					0.6	0.26
<i>Marine Mammals</i>	317.4	433.0	391.3	569.1	727.8	487.7	221.24
Polar Bear	2.5	2.9		2.8		2.7	1.24
Seal	185.6	100.1	217.6	440.2	675.2	323.7	146.85
Bearded Seal	156.6	73.6	168.5	235.9	295.1	185.9	84.34
Ribbon Seal	0.9		0.3			0.6	0.28
Ringed Seal	22.0	26.2	48.4	203.7	377.8	135.6	61.51
Spotted Seal	6.1	0.3	0.4	0.6	2.3	2.0	0.89
Walrus	61.7	13.3	14.2	18.8		27.0	12.24
Whale	67.6	316.7	159.4	107.4	52.6	140.7	63.84
Beluga	29.0	166.3	159.4	107.4	52.6	103.0	46.70
Bowhead	38.5	146.7				92.6	42.01
Gray Whale		3.7				3.7	1.68
<i>Birds and Eggs</i>	6.0	2.0	1.1	0.1	5.7	3.0	1.36
<i>Migratory Birds</i>	1.5	1.5	0.3			1.1	0.51
Eider	1.5	1.5	0.3			1.1	0.51
<i>Bird Eggs</i>	4.5	0.5	0.8	0.1	5.7	2.3	1.05
Seabird & Loon Eggs	2.3	0.2	0.4	0.1	2.9	1.2	0.53
Gull Eggs	0.2	0.0	0.0			0.1	0.04
Murre Eggs	2.0	0.2	0.4	0.1	2.9	1.1	0.50
<i>Marine Invertebrates</i>	0.1					0.1	0.04
Crabs	0.0					0.0	0.00
Tanner Crab	0.0					0.0	0.00
Shrimp	0.1					0.1	0.03

Table D-2. Representative diet for Emmonak, Alaska for 1980 (Alaska Department of Fish and Game, 1995).

Marine-Subsistence Resource	Representative Consumption Rates	
	lb/yr	kg/yr
All Resources	546.26	247.78
Fish	399.89	181.39
<i>Salmon</i>	226.04	102.53
Chum Salmon	131.70	59.74
Coho Salmon	14.64	6.64
Chinook Salmon	79.70	36.15
<i>Non-Salmon Fish</i>	173.85	78.86
Tom Cod	7.99	3.62
Sheefish	71.41	32.39
Whitefish	61.79	28.03
Cisco	32.66	14.81
Marine Mammals	94.52	42.87
Seal	42.67	19.36
Bearded Seal	12.10	5.49
Ringed Seal	18.82	8.54
Spotted Seal	11.75	5.33
Whale	51.85	23.52
Beluga	51.85	23.52

Table D-3. Representative diet for Point Lay, Alaska for 1987 (Alaska Department of Fish and Game, 1995).

Marine-Subsistence Resource	Representative Consumption Rates	
	lb/yr	kg/yr
All Resources	679.77	308.34
<i>Fish</i>	24.75	11.23
<i>Salmon</i>	3.52	1.60
Chum Salmon	2.01	0.91
Pink Salmon	1.51	0.68
<i>Non-Salmon Fish</i>	21.23	9.63
Herring	0.04	0.02
Smelt	0.31	0.14
Flounder	0.80	0.36
Char	4.58	2.08
Grayling	14.81	6.72
Sheefish	0.00	0.00
Whitefish	0.69	0.31
<i>Marine Mammals</i>	637.42	289.13
Polar Bear	5.48	2.49
<i>Seal</i>	55.24	25.06
Bearded Seal	19.42	8.81
Ringed Seal	17.23	7.82
Spotted Seal	18.59	8.43
Walrus	38.18	17.32
Whale	538.52	244.27
Beluga	538.52	244.27
Bowhead	0.00	0.00
<i>Birds and Eggs</i>	17.60	7.98
Migratory Birds	8.74	3.96
Eider	8.74	3.96
Seabirds & Loons	0.06	0.03
Murre	0.06	0.03

Table D-4. Representative diet for Barrow, Alaska for the years 1987–1989 (Alaska Department of Fish and Game, 1995).

Marine-Subsistence Resource	1987	Years 1988 Consumption, lb/yr	1989	Average Intake Rates lb/yr	kg/yr
All Resources	134.59	129.33	211.01	158.3	71.81
Fish	27.17	16.33	38.25	27.2	12.36
<i>Salmon</i>	0.38	0.17	4.04	1.5	0.69
Chum Salmon	0.02	0.01	1.04	0.4	0.16
Coho Salmon	0.2	0.14	1.65	0.7	0.30
Chinook Salmon	0.02	0.01	0.19	0.1	0.03
Pink Salmon	0.01		0.27	0.1	0.06
Unknown Salmon	0.13	0.01	0.89	0.3	0.16
<i>Non-Salmon Fish</i>	26.79	16.16	34.21	25.7	11.67
Smelt	0.27		0.08	0.2	0.08
Capelin (grunion)	0.26		0.02	0.1	0.06
Rainbow Smelt	0.01		0.06	0.0	0.02
<i>Cod</i>	0	0.59	1.13	0.6	0.26
Arctic Cod	0	0.53	1.13	0.6	0.25
Pacific Tom Cod	0	0.06		0.0	0.01
<i>Char</i>	0.03	0.07	0.13	0.1	0.03
Arctic Char	0.03	0.07	0.13	0.1	0.03
Grayling	3.36	2.3	2.23	2.6	1.19
<i>Cisco</i>	8.9	2.54	1.44	4.3	1.95
Bering Cisco	1.4	0.05	0.47	0.6	0.29
Least Cisco	7.5	2.49	0.97	3.7	1.66
<i>Whitefish</i>	14.23	10.66	29.21	8.0	8.18
Broad Whitefish	9.12	9.76	26.17	15.0	6.81
Humpback Whitefish	1.02	0.54	3.02	1.5	0.69
Round Whitefish	0.7	0.24	0.01	0.3	0.14
Unknown Whitefish	3.39	0.12		1.8	0.80
Marine Mammals	104.85	110.76	168.5	128.0	58.08
Polar Bear	1.9	1.87	6.46	3.4	1.55
Seal	20.29	15.88	10.97	15.7	7.13
Bearded Seal	13.77	10.42	6.35	10.2	4.62
Ringed Seal	6.49	5.41	4.57	5.5	2.49
Spotted Seal	0.03	0.05	0.05	0.0	0.02
Walrus	21.44	15.65	25.86	21.0	9.52
Whale	61.22	77.36	125.21	87.9	39.89
Beluga	0			0.0	0.00
Bowhead	61.22	77.36	125.21	87.9	39.89
Birds and Eggs	2.57	2.24	4.26	3.0	1.37
Eider	2.57	2.24	4.26	3.0	1.37
Common Eider	0	0.01	0.03	0.0	0.01
King Eider	0.04	0.01	0.05	0.0	0.02
Spectacled Eider	0			0.0	0.00
Steller Eider	0			0.0	0.00
Unknown Eider	2.53	2.22	4.18	3.0	1.35

Table D-5. Consumption of subsistence food for Broughton Island, NWT (Health Canada, 1995).

Source	Adult	Critical Group
	kg/y	
Fish	66.4	85
Marine Mammals	301	390
Large Land Mammals	64.1	90
Small Animals	3.1	5.8
Totals	434.6	570.8

Table D-6. Estimated food consumption of adults living in coastal villages of the 1960s (from Wilimovsky and Wolfe, 1966).

Item	Season				Annual
	Spring	Summer	Fall	Winter	
	Amount Consumed, kg				
Caribou	76.7	45.5	45.5	76.7	244.4
Fish	23.4	23.4	27.3	23.4	97.5
Ugruk	14.3	15.6	14.3	12.35	56.55
Seals	7.67	7.02	5.33	10.01	30.03
Fowl	11.18	5.85	5.85	5.85	28.73
Walrus	0	0	0	0	0
Whale	5.33	0	0	0	5.33
Rabbit	0	0	0	0	0
Berries	0	7.02	0	0	7.02
Murre Eggs	0	18.2	0	0	18.2
Bear	0	0	0	0	0
Crab	13	0	13	13	39
Total Native	150.8	96.2	110.5	140.4	497.9
Native & Store	369.2	235.3	270.4	343.2	1,218.1

Table D-7. Estimated food consumption of adults living in Point Hope, Alaska in the 1960s (from Wilimovsky and Wolfe, 1966).

Item	Season				
	Spring	Summer	Fall	Winter	Annual
	Amount Consumed, kg				
Caribou	39	20.8	26	40.3	126.1
Fish	5.85	26	28.6	24.7	85.15
Ugruk	19.5	11.18	11.83	19.5	62.01
Seals	26	16.9	20.8	19.5	83.2
Fowl	9.49	16.9	5.85	5.85	38.09
Walrus					
Whale	20.8	13			33.8
Rabbit					
Berries		7.02			7.02
Murre Eggs		18.2			18.2
Bear				7.02	7.02
Crab					
Total Native	124.8	135.2	100.1	114.4	474.5
Native & Store	254.8	275.6	204.1	235.3	969.8

Table D-8. Estimated food consumption of adults living in Barrow, Alaska in the 1960s (from Wilimovsky and Wolfe, 1966).

Item	Season				
	Spring	Summer	Fall	Winter	Annual
	Amount Consumed, kg				
Caribou	15.6	16.9	15.6	16.9	65
Fish	11.83	12.35	13	13	50.18
Ugruk	7.02	7.02	5.33	7.67	27.04
Seals	6.5	6.5	5.33	7.67	26
Fowl	4.68	6.5	5.33	5.33	21.84
Walrus	4.68	4.68	5.33	5.33	20.02
Whale	10.01	0			10.01
Rabbit					
Berries		0			0
Murre Eggs		0			0
Bear	0.65			0	0.65
Crab					
Total Native	61.1	53.3	50.7	57.2	222.3
Native & Store	192.4	167.7	156	176.8	692.9

Table D-9. Estimated food consumption by adults living in Diomede, Alaska in the 1960s (from Wilimovsky and Wolfe, 1966).

Item	Spring	Summer	Season		Annual
			Fall	Winter	
Caribou	0	23.4	0	5.85	29.25
Fish	0.585	0	0	13	13.585
Ugruk	31.2	20.8	20.8	29.9	102.7
Seals	31.2	20.8	20.8	29.9	102.7
Fowl	24.7	8.84	0	0	33.54
Walrus	28.6	26	26	26	106.6
Whale	13	0			13
Rabbit					
Berries		0			0
Murre Eggs	14.3	14.3			28.6
Bear				0	0
Crab				8.84	8.84
Total Native	143	114.4	67.6	113.1	438.1
Native & Store	187.2	150.8	88.4	149.5	575.9

Table D-10. Estimated food consumption of adults living in Kotzebue, Alaska in the 1960s (from Wilimovsky and Wolfe, 1966).

Item	Spring	Summer	Season		Annual
			Fall	Winter	
Caribou	37.7	35.1	37.7	37.7	148.2
Fish	18.2	18.2	18.2	19.5	74.1
Ugruk	10.66	8.84	5.85	12.35	37.7
Seals	8.32	7.02	7.02	12.35	34.71
Fowl	8.84	5.85	8.32	11.83	34.84
Walrus					
Whale	13	13			26
Rabbit				2.47	2.47
Berries	4.68	10.66	4.68	7.67	27.69
Murre Eggs		0			0
Bear				0	0
Crab					
Total Native	100.1	98.8	81.9	105.3	386.1
Native & Store	345.8	339.3	280.8	362.7	1328.6